



Digital Energy Management Transformation with Predix

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GE -The Digital Industrial Company



GE for GE



GE for customers



GE for world

\$15B Software business by 2020

Transforming Industrial Operations

Asset Performance Management



Maximize performance and asset availability

Operations Optimization



Increase system efficiency across operations

Digital Twin/Digital Thread



Optimize lifecycle of design, manufacturing, service, & repair cycles

Creating
New Value

1

Improved operational performance and efficiency

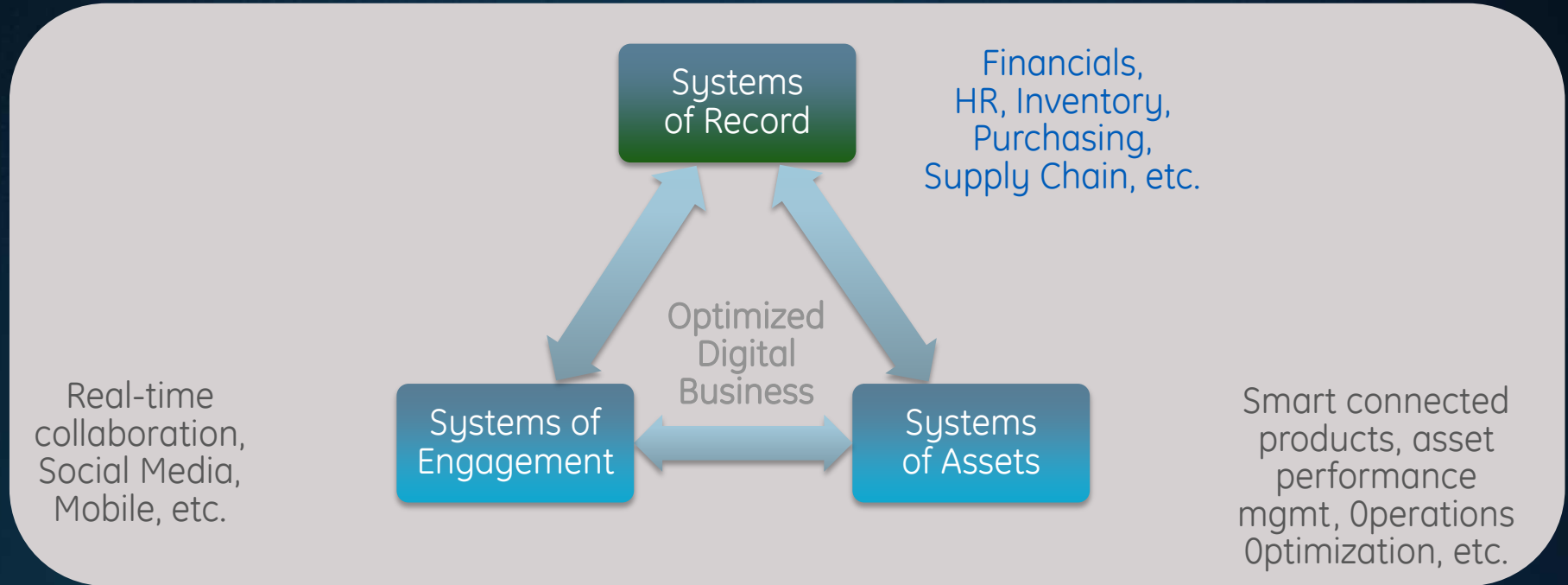
2

New customer services and business models

3

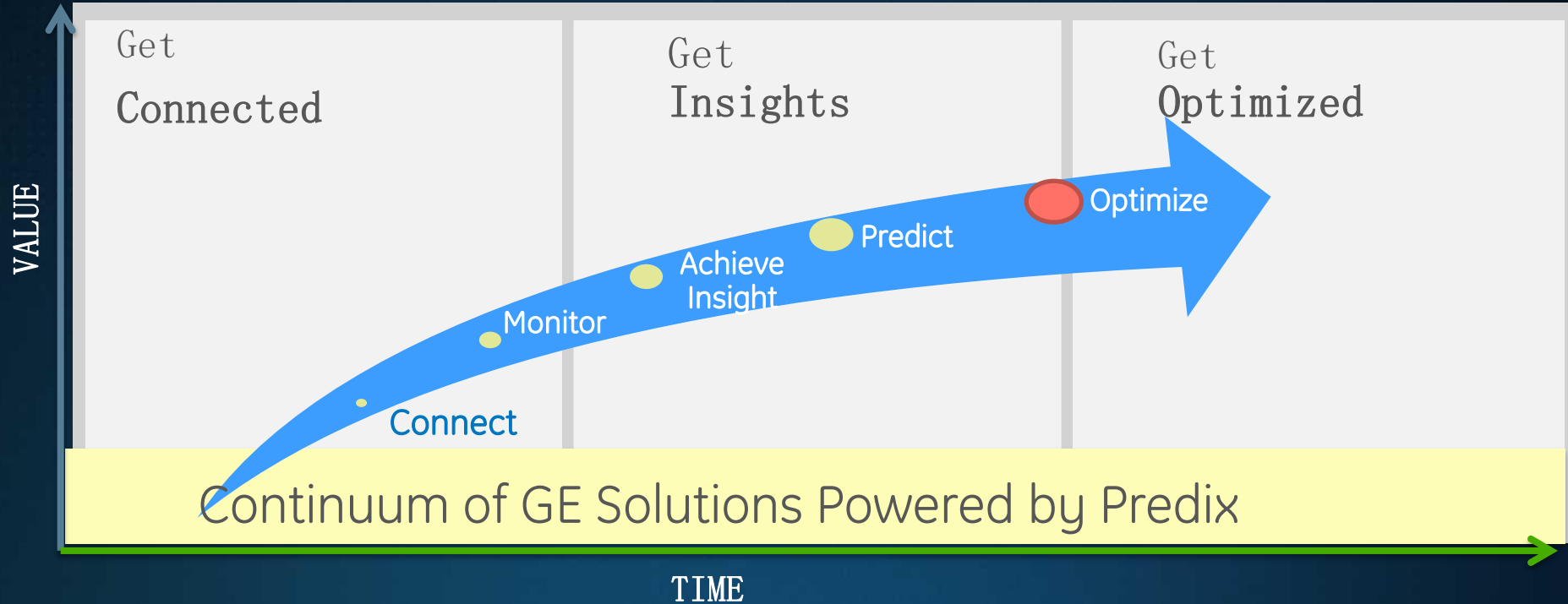
Continuous innovation and faster time to market

Operational Excellence is Key to Business Optimization



Asset-centric industries have the most to gain from the next wave of disruptive digital innovation

Plan Digital Strategy



Our Approach: The Digital Transformation



BUSINESS OPTIMIZATION

Profitability and Growth



OPERATIONS OPTIMIZATION

Productivity and Flexibility



ASSET PERFORMANCE MANAGEMENT

Reliability and Availability



PREDIX

Cloud Platform for the
Industrial Internet



ADVANCED CONTROLS

Analytics and Actions at
the Edge



Cyber

Defense for Industrial
Operations

Predix: Purpose-built platform for Digital Transformation

Cloud-based platform for
Industrial Internet

Connected Assets

Industrial Data Management

Industrial Data Science

Cloud & Mobile



Optimized for
Industrial Requirements

Asset Performance Mgmt

Operations Optimization

Industrial Analytics

Digital Twin



Reliability

Increase availability
and longer asset life



Cost Reduction

Lower operating
costs with greater
efficiencies



Risk Mitigation

Lower operations and
financial risk



Profitable Growth

Increase production
for market
advancement

Predix and Industrial Analytics

Advanced Data Science



Physics-based

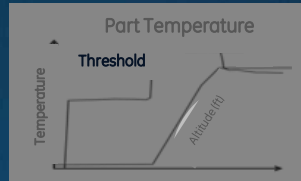
Applied
Engineering



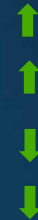
Data
Continuous,
accessible



Statistics
Identify trends
and anomalies



Physics
Apply asset
and domain
expertise



Industrial Outcomes

One platform for OT
and IT teams to
collaborate and
innovate

Faster Innovation: Modern App Development

DevOps and Continuous Delivery

12 month releases

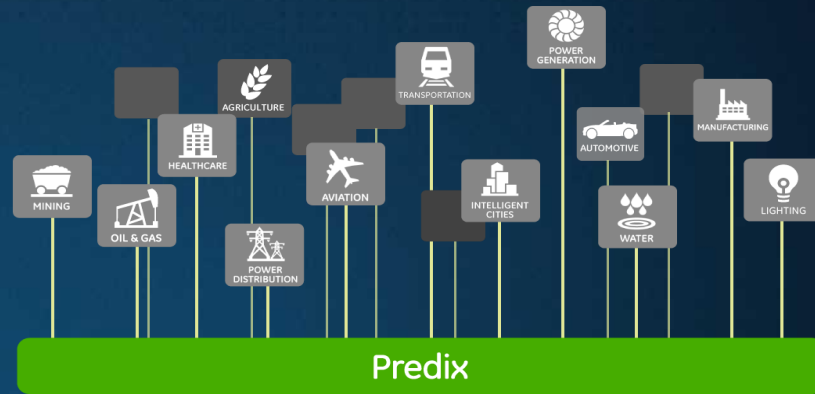
10 applications

Zero user feedback

7 day releases

100+ apps

Instant user feedback



Predix Catalog and Marketplace

Predix BETA Catalog Resources Community Support Sign in Register

Catalog

EDGE SOFTWARE AND SERVICES

- Machine**
Create solutions that enable machine-to-cloud, machine-to-machine, and machine-to-human connectivity.
Predix
- Connectivity-as-a-Service**
Secure connectivity between asset and edge devices to the Predix cloud.
Predix
- Edge Analytics** beta
Use this edge app service to shorten your time-to-market and connect it with OT processes and apps.
FOG HDSAN

DATA MANAGEMENT SERVICES

- Asset Data**
Create and store machine asset models and instances.
Predix
- Time Series Store**
Quickly and efficiently manage, ingest, store, and analyze data.
Predix
- SQL Database**
Store data securely, support best practices, and facilitate retrieval as the request of other software apps.
PostgreSQL
- Object Store**
Use simple, available, distributed cloud storage at any scale with this S3-compatible object store based on Risk Cloud Storage.
riakCS
- Key-Value Store**
Use this open-source key-value cache and store that can contain strings, hashes, lists, sets, bitmaps, and more.
redis
- Message Queue**
Use this scalable, high-performance, multi-protocol tool to message between apps, components, and devices.
RabbitMQ
- BLOB Store** beta
Use this binary large object storage. BLOB service to securely store large byte arrays and retrieve data using any REST API.
Predix

ANALYTICS SERVICES

- Analytics Catalog**
Add analytics to the Predix cloud for use with the Analytics Runtime Service.
Predix
- Analytics Runtime**
Use this service to support elastic execution of the analytic orchestration.
Predix
- Anomaly Detection** beta
Identify threats and anomalous events in critical infrastructure and operations.
ThetaRay
- Data Imputation** beta
Solve data quality problems with this service that identifies missing data and enters approximate values based on historical data.
GE Software Research
- GE SmartSignal** beta
Use this predictive diagnostic service to avoid unexpected shutdowns through early warning of impending equipment failure.
Predix

GE and 3rd-party Services...

User Account and Authorization

Use this service for a full-featured OAuth 2.0 authorization server.

Predix

Access Control Service

Use this service to provide a more powerful framework than basic User Account and Authorization.

Predix

SQL Database

Store data securely, support best practices, and facilitate retrieval at the request of other software apps.

PostgreSQL

Message Queue

Use this scalable, high-performance, multi-protocol tool to message between apps, components, and devices.

RabbitMQ

Asset Data

Create and store machine asset models and instances.

Predix

Time Series Store

Quickly and efficiently manage, ingest, store, and analyze data.

Predix

Logging

Manage all your app logs and save, search, and visualize them.

logstash

Key-Value Store

Use this open-source key-value cache and store that can contain strings, hashes, lists, sets, bitmaps, and more.

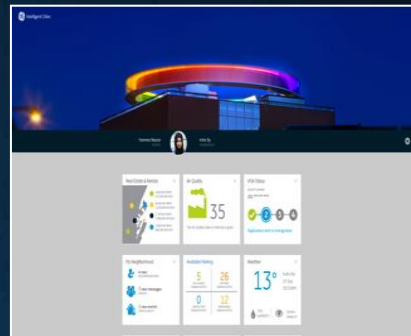
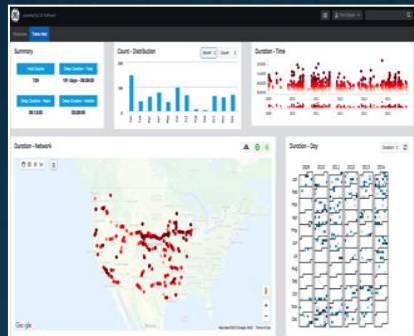
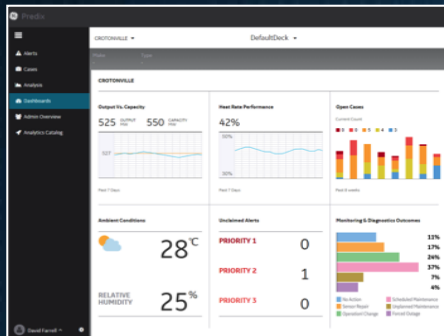
redis

Views

Control layout and components within your client-side web or mobile app.

Predix

GE's Digital Transformation Journey



OIL & GAS

- Maximize Production
- Predictive Maintenance
- Remote Collaboration
- Reduced Risk
- Environmental Control

POWER GENERATION

- Maximize Production
- Longer Repair Intervals
- Reduce Emissions
- Predictive Maintenance
- Longer Asset Life

POWER DISTRIBUTION

- Revenue Protection
- Meter Health
- Power Quality
- Load Forecasting
- Predictive Maintenance

WIND

- Maximize Farm Power
- Wind Wake Protection
- Outage Detection
- Continuous Operation

WATER

- Operational Integrity
- Minimize Water Use
- Control Emissions
- Minimize Cost

AVIATION

- Maximize Fuel Use
- Risk Management
- Predictive Maintenance
- Efficient Operations
- Customer Satisfaction

RAIL

- Maximize Fuel Use
- Enhanced Operation
- Network Velocity
- Predictive Maintenance
- Supplier Collaboration

HEALTHCARE

- Patient Experience
- Improved Hand Hygiene
- Cost Reduction
- Efficient Operations
- Regulatory Compliance

MANUFACTURING

- Cost Reduction
- Consumer Protection
- Efficient Operations
- Regulatory Compliance
- Predictive Maintenance

MINING

- Maximize Production
- Efficient Operations
- Safe Operations
- Predictive Maintenance

